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## SPATIAL-DEMOGRAPHIC CHANGES IN SOSNOWIEC

Szajnowska-Wysocka A., Kantor-Pietraga I. **Zmiany przestrzenno-demograficzne na obszarze Sosnowca.** Przedmiotem opracowania jest wskazanie tendencji przemian przestrzenno-demograficznych w Sosnowcu. Analizę ilościową i jakościową dokonano na podstawie cech dotyczących wieku, wykształcenia i zatrudnienia. W celu szczegółowego zróżnicowania ludnościowego przyjęto podział przestrzeni miasta na dzielnice, rejony statystyczne oraz obręby geodezyjne. Syntezę przestrzennego zróżnicowania badanych struktur stanowiła typologia, która umożliwiła określenie stopnia upodabniania się (ujednolicania) analizowanych jednostek przestrzennych, wyrażonych odległościami taksonomicznymi. Wyniki analityczne pozwoliły na ustanowienie badawcze, dotyczące intramiejskich struktur ludnościowych w Sosnowcu.

Шайновска-Высоцка А., Кантор-Петрага И. **Пространственно-демографические изменения на территории г. Сосновца.** Цель исследований – выявить тенденции пространственно-демографических изменений в г. Сосновец. Количественный и качественный анализы проведены на основании возраста, образования и занятости населения. Для подробной характеристики дифференциации населения было принято деление города на кварталы, статистические районы и геодезические участки. Синтезом пространственной дифференциации исследуемых структур выступает типология, предоставляющая возможность определить степень унификации анализируемых пространственных единиц при помощи таксономического расстояния. На основании результатов исследований были сделаны выводы по внутригородским демографическим структурам Сосновца.

**Key words:** population structure, spatial-demographic typology, intraurban diversity

### Abstract

The aim of this paper is to provide an overview of trends of spatial-demographic changes in city of Sosnowiec. Both qualitative and quantitative analysis have been made on the base of following features: population age, education and employment structure. Division of urban space by quarters as well as statistical units and geodetic limits has been taken into consideration to explain details of demographic diversity. An synthetic effect of researches on presented structures is original typology that underlines rank of unification of analyzed spatial units by taxonomic distance. Analytical results allow to make research conclusions for intraurban demographic structures in city of Sosnowiec.

### INTRODUCTION

The problem of population as well as demographic, social and economic changes in Silesian Province have been the subject of many studies, which results have been presented in numerous publications. As examples, the works of the following authors can be mentioned: JAŁOWIECKI (1970, 1998), FRĄCKIEWICZ (1977, 1980, 2004), RAUZIŃSKI (1988), ZADROŻNY (1988), RYKIEL (1989), SZAJNOWSKA-WYSOCKA (1989, 1999, 2000), MAGDA, RUNGE (1990), SZPOR (1992), RAJMAN (1994, 1997), LISZEWSKI (2002).

The Silesia Region, due to high population density as well as due to industrialisation and urbanisation processes in the 19<sup>th</sup> and the 20<sup>th</sup> centuries, is an interesting research area. Sosnowiec is one of the towns in Silesia where system transformation and economic restructuring have caused significant changes in population and economy, being the result of historical, regional conditions, as well as cultural and civilisation development (SZAJNOWSKA-WYSOCKA, 2003, 2005, 2006).

Proving spatial-demographic tendencies in an industrial centre on the example of Sosnowiec has been the goal of the work. Quantitative and qualitative analyses have been made basing on social-economic features, which have been aggregated into three groups: age (pre-production, production and post-production), education level (higher and secondary, vocational training and elementary) and professional activity (according to the economic sectors). The town area has been divided into different units, depending on the availability of the source materials, to determine precisely its space. The units are as follows: territorial units – quarters (for the research period 1978–2005), statistic regions (according to the census of the years 1978 and 1988) and separate geodetic sections (according to the National Census data of 1978, 1988, 2002).

The synthesis of spatial differentiation of the investigated structures is an attempt to determine the

degree of similarity of the analysed space units, expressed in a taxonomic distance. One of the applied methods has been the multi-variables one based on spatial typology of Sosnowiec.

## SPATIAL DISTRIBUTION OF POPULATION

Sosnowiec population is presented according to structural (territorial) units marked with symbols: A, B, C...T, usually called quarters, which were previously separate settlements, finally forming one urban orga-

nism. The territorial units have been treated as morphogenetic units of the town. The term quarter, in case of Sosnowiec, is used only theoretically, as the town has not formally comprised quarters like for example Cracow, Łódź or Warsaw (SZAJNOWSKA-WYSOCKA, 2003).

The amount of demographic potential of the investigated area has been characterised basing on the main determiner, which is the total population and its changes in time. Analysis of the dynamics of population changes in particular quarters of Sosnowiec in the years 1978–2005 (tab. 1) has been carried out.

Table 1. Population in Sosnowiec quarters in the period of 1978–2005  
Tabela 1. Ludność Sosnowca wg dzielnic w okresie 1978–2005

Quarters (with symbols)		Population				Population changes (increase/decrease)			
		1978	1988	1995	2005	1978–1988	1988–1995	1995–2005	1978–2005
Total		229785	258635	246228	233500	28850	-12407	-12728	3715
A	Milowice	7712	6933	5874	5300	-779	-1059	-574	-2412
B	Pogoń	45010	40732	37242	34200	-4278	-3490	-3042	-10810
C	Stary Sosnowiec	17451	17530	16803	16300	79	-727	-503	-1151
D	Śródmieście	46403	53925	50586	48200	7522	-3339	-2386	1797
E	Środula	9687	18520	18250	17700	8833	-270	-550	8013
F	Północ	1384	834	644	600	-550	-190	-44	-784
G	Zagórze	40076	57730	57142	53400	17654	-588	-3742	13324
H	Dębowa Góra	9335	8492	7772	7200	-843	-720	-572	-2135
J	Ludmiła-Staszic	1007	916	1195	1000	-91	279	-195	-7
K	Niwka-Modrzejów	12998	12691	11948	12600	-307	-743	652	-398
L	Dańdówka	5123	6016	6014	5800	893	-2	-214	677
M	Bobrek	878	893	890	800	15	-3	-90	-78
N	Jęzor-Bór	3983	4003	3732	3500	20	-271	-232	-483
O	Klimontów	9556	8206	7547	7200	-1350	-659	-347	-2356
P	Porąbka	1242	1046	921	800	-196	-125	-121	-442
R	Kazimierz	4954	8613	8386	8300	3659	-227	-86	3346
S	Ostrowy Górnicze	4127	3110	2899	2700	-1017	-211	-199	-1427
T	Maczki	2138	2056	1970	1900	-82	-86	-70	-238
U	Zawodzie	6721	6389	6413	6000	-332	24	-413	-721

Source: by authors on the base of: KANTOR-PIETRAGA I., SZAJNOWSKA-WYSOCKA A. (2007), SZAJNOWSKA-WYSOCKA A., KULESZA M. (2007), TKOCZ M. (2007)

In 1978, the highest concentration of population occurred in the central quarters: Śródmieście (46,400), Pogoń (45,000), Stary Sosnowiec (17,400) and Zagórze (40,000). The latter was located off the centre, but it was in close vicinity of the Katowice Steelwork. 148,800 lived in the above mentioned quarters in that year, which was 65% of the town population. Further quarters were Milowice (7,700) and the quarters which had been independent towns before they were united with Sosnowiec: Niwka-Modrzejów (13,000), Klimontów (9,500) and Kazimierz (4,900).

The population of the town increased by 28,000 of inhabitants during the next decade i.e. 1978–1988, which was equal to 113% in the dynamic approach and took place mainly in the previously mentioned quarters and the ones with housing development: Zagórze (17,600, 144%), Środula (8,800, 191%), Śródmieście (7,500, 116%), Kazimierz (3,600, 174%). While, the decrease of population was observed in such peripheral quarters as: Klimontów (-1,300, 86%), Ostrowy Górnicze (-1,000, 75%), Dębowa Góra (-800,

91%) and the quarters with no investment in housing, i.e. Pogoń (-4,300, 90%), Milowice (-800, 90%).

During the next seven years (1988–1995) significant decrease of Sosnowiec population – over 12 thousand people was observed, which mainly occurred in the previously mentioned quarters: Pogoń (-3,500, 91%), Milowice (-1,000, 85%), Dębowa Góra (-700, 91%), and also in: Śródmieściu (-3,300, 94%), Stary Sosnowiec (-700, 96%) and Klimontów (-600, 92%).

During the last investigated decade (1995–2005) further decrease of population could have been observed, which was still at the level of more than 12 thousand people. The highest drop-off was observed in Zagórze (-3,700, 93%), Pogoń (-3,000, 92%) and Śródmieście (-2,400, 95%).

The carried out analysis has proved that the population potential in Sosnowiec in the period of 1978–2005 was distributed unevenly. There was an abrupt growth of population in the 1970's and 1980's, due to the administration reform and intensive inflow of immigrants being the result of construction and opening

of the Katowice Steelwork. Those people settled in the quarters neighbouring Dąbrowa Górnicza, where great residential areas, for dozens of thousands of miners and steelworkers were developed. Decrease of population in Sosnowiec started in 1990's and it has been lasting till now. Detailed analysis of the state and dynamics of population in 1990's has proved that the maximum drop-off occurred in 1992. Similar tendency of decrease of the population down to the negative values occurred in 1990's, which was characteristic for the whole Katowice Province in that time (KANTOR-PIETRAGA, RUNGE, 2001).

System transformations, which were caused by economic, social and ecological changes, also influenced demographic development of the town. There were indications of a demographic crisis, which were following the general national population trends determined by a low of the demographic cycle (OKÓLSKI, 1990).

Then, detailed analysis of distribution of inhabitants of Sosnowiec according to the statistic regions has been carried out. That helps to determine more precisely the areas of the population concentration. The research covers the period of 1978–1988, when the increase of population was the most intensive.

Among 207 regions, only 39 ones had concentration of inhabitants over 2.0% (from 2.0 to 2.7%). They were located in such quarters as: Pogoń, Stary Sosnowiec, Śródmieście, which were intensive in character as they were relatively small. A few such intensive regions were situated in Środula and Zagórze. Extensive (large) units occurred in the southern quarters of Sosnowiec (Jęzor-Bór, Niwka-Modrzejów, Zawodzie, Maczki). The most common regions were the ones with concentration of 2.0–1.0%. They comprised more than a half of the total number of regions (122 ones), hence, they almost filled in the remaining part of the town space. Few regions (46) had low concentration of inhabitants (1.0–0.0%) and they appeared in such quarters as: Zagórze, Środula, Kazimierz, Porąbka and Maczki.

The National Census of 1988 proved increase of population by over 28.000 people. The mosaic of the regional population potential was different comparing to the data of 1978: there were only 25 ones with the share over 2% (up to 7.1%) and they were concentrated in Środula and Zagórze, as well as in Śródmieście and Stary Sosnowiec (some of them had had the lowest population ten years earlier). There was an increase of the number of regions in the range from 2.0% to 1.0% up to 133 and they were dominating in the town space. Less populated regions (below 1.0%) remained unchanged. The above results suggest that intensive urbanisation of Sosnowiec, which was observed in the period of 1978–1988, increased the range with the highest concentration: 2.0%–7.1%. Then the regions with concentration above 2.7% appeared (the highest in 1978), among them, there were the regions with low population in 1978: Środula, Zagórze, Śródmieście (KANTOR-PIETRAGA, SZAJNOWSKA-WYSOCKA, 2007).

National Census results of 1978 and 1988 enable to present spatial distribution of population in Sosnowiec in 207 statistic regions, which has been aggregated into three groups, according to their economic-social features: age (pre-production, production, post-production), education (higher, secondary, vocational and elementary) and professional activity (according to the sectors of the national economy).

## SPATIAL DISTRIBUTION OF POPULATION ACCORDING TO AGE

In 1987, the highest concentration of people in the pre-production age (0.8%–1.3%) occurred in 27 regions located in: Zagórze, Kazimierz, Stary Sosnowiec and Śródmieście. Slightly lower level of youth (0.8–0.4%) could have been observed in Milowice, Pogoń, Śródmieście, Klimontów, Maczki and Kazimierz, which due to their total number of 102 become clearly visible in the town space. The regions with the minimum share (0.4–0.0%), which number was equal to 78, occurred in the quarters with extensive trends in their areas, such as: Maczki, Ostrowy Górnicze, Porąbka, Klimontów, but otherwise also in Zagórze and Środula.

The next research year – 1988, proved significant changes, that took place during the period of intensive population of the Sosnowiec regions with the highest number of inhabitants. It enhanced concentration of inhabitants in the pre-production age up to 3.5% in 31 regions located in Zagórze, Środula and Śródmieście. Such significant concentration of children and teenagers in the quarters with the highest increase of population in 1978–1988 proves the quarters were settled by developing families. The number of inhabitants in the pre-production age in the depopulating quarters was very low as children used to live with their parents only up to a certain age. There is a spatial rule in the age analysis, which says that spatial distributions in various age periods are not reciprocally independent (KANTOR-PIETRAGA, SZAJNOWSKA-WYSOCKA, 2007).

Distribution of population in the post-production age in 1978, at the beginning of the period of intensive demographic urbanisation (fig. 1), is quite interesting. Spatial distribution of the analysed age category created a mosaic of statistic regions, where only 6 of them, mostly concentrated in Śródmieście and Pogoń, had the highest percentage share (0.8–1.0%). The share in the range of 0.8–0.4% in the population potential was observed in 138 regions. Hence, they were dominating in the spatial mosaic of population in the production age, occurring in Milowice, Pogoń, Śródmieście, Stary Sosnowiec, Klimontów, Zawodzie, Maczki, Jęzor-Bór. The regions with the minimum share (below 0.4%) reached the number of 63 units and occurred in Zagórze, Środula, Niwka-Modrzejów and the regions with extensive trends in the areas: Maczki, Zawodzie and Ostrowy Górnicze.

After abrupt demographic urbanisation of Sosnowiec, connected with intensive industrialisation of The Dąbrowa Basin (the Katowice Steelwork), quantitative and spatial regrouping in „regional” classification of the town population occurred. Fig. 2 presenting spatial distribution of population in the production age in 1988 shows a significant change in distribution of statistic regions with the highest percentage of its share, which due to increase of population grew in the analysed period up to 2.8% and occurred in 17 units, which was 3 times more than in 1978. The quantitative and spatial changes, known from

comparative analysis of the whole population of Sosnowiec, occurred mainly in the quarters of „increase”, such as: Zagórze, Śródula, Śródmieście and Kazimierz. Slightly lower concentration of population in the production age (0.8–0.4%) was characteristic for the half of the amount of the statistic regions (106), which were in majority in Milowice, Pogoń, Dębowa Góra and Maczki. Quite large number of regions (84), with the lower number of inhabitants in the production age (below 0.4%) formed a compact area in: Zawodzie, Ostrowy Górnicze, Maczki, Niwka–Modrzewów, Bobrek, Dębowa Góra and Północ.

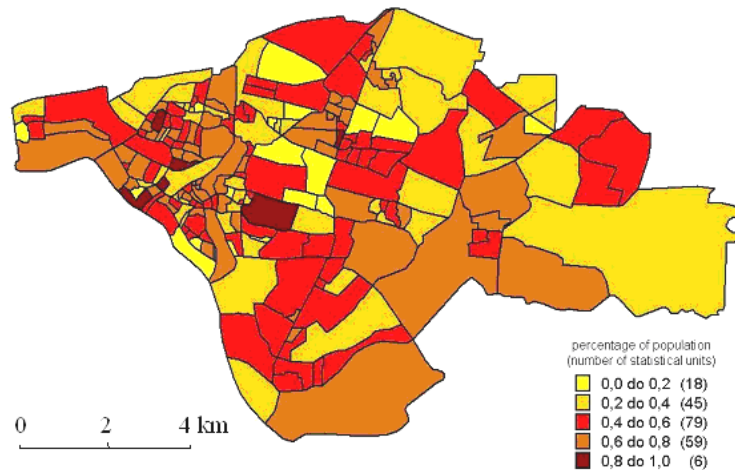


Fig. 1. Spatial distribution of population in the production age, 1978 (by authors)

Rys. 1. Rozkład przestrzenny ludności w wieku produkcyjnym w 1978 roku (opracowanie własne)

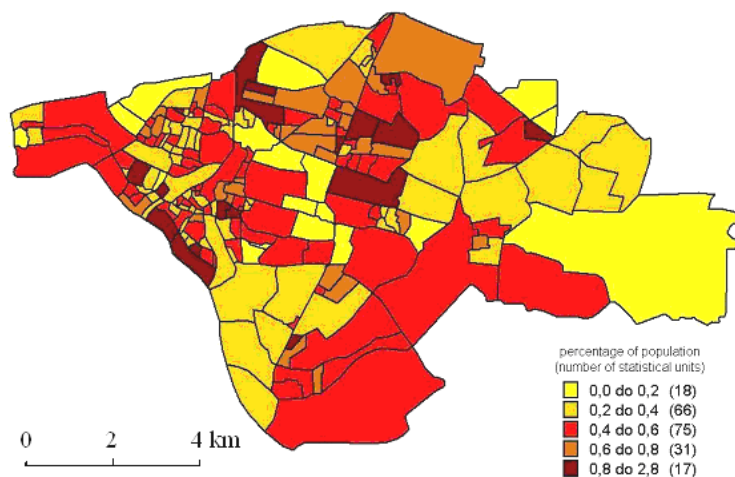


Fig. 2. Spatial distribution of population in the production age, 1988 (by authors)

Rys. 2. Rozkład przestrzenny ludności w wieku produkcyjnym w 1988 roku (opracowanie własne)

On the other hand, distribution of the oldest group of the population (post-production age) presented a negative copy of the spatial layout of the youngest group (pre-production age), especially in 1988. Visible spatial segmentation of the population according to age was related to the age of the buildings they lived in. In most of the statistic regions the age of the population was proportional to the age of the buildings, senior citizens, due to tradition and emotional relation to

their old dwellings and negative attitude to modern blocks of flats were in majority in the quarters with old housing: Śródmieście, Stary Sosnowiec, Pogoń, Milowice, Klimontów, Zawodzie, Jęzor-Bór, Ostrowy Górnicze. The number of regions with the senior majority decreased in the investigation period, especially in the quarters with multi-block housing, where young families lived, as the houses were mainly built for them. Attempts to explain social-spatial differences

by living conditions, i.e. quality and location of dwelling which determined the demographic, family, occupational and social structures, confirm the idea (WĘCŁAWOWICZ, 1989).

### SPATIAL DISTRIBUTION OF POPULATION ACCORDING TO EDUCATION

An analysis of spatial distribution of the demographic potential in Sosnowiec according to the education level in 207 statistic regions has been the next one carried out. In 1978 population with university and se-

condary education was mainly concentrated in the „central” quarters: Śródmieście, Stary Sosnowiec and Pogoń (from 1.4 to 0.6% – 67 regions). Lower percentage level, below 0.6% occurred in 140 regions, which reflected the space of other quarters of the town (fig. 3). After 10 years, significant shift of concentration of inhabitants with secondary and higher education to the quarters which were being populated in that time – Zagórze, Środula (from 2.8 to 0.6%) was observed, which is presented in fig. 4. New development estates were being built in those quarters and young families with secondary and higher education were settling there.

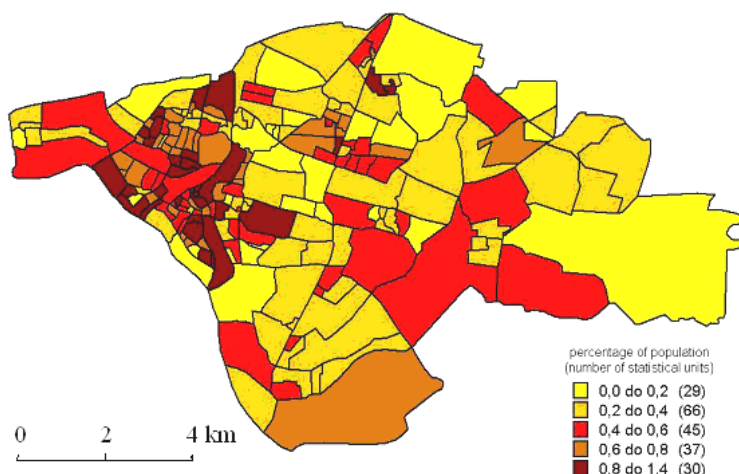


Fig. 3. Spatial distribution of population with higher and secondary education, 1978 (by authors)  
Rys. 3. Rozkład przestrzenny ludności z wykształceniem wyższym i średnim w roku 1978 (opracowanie własne)

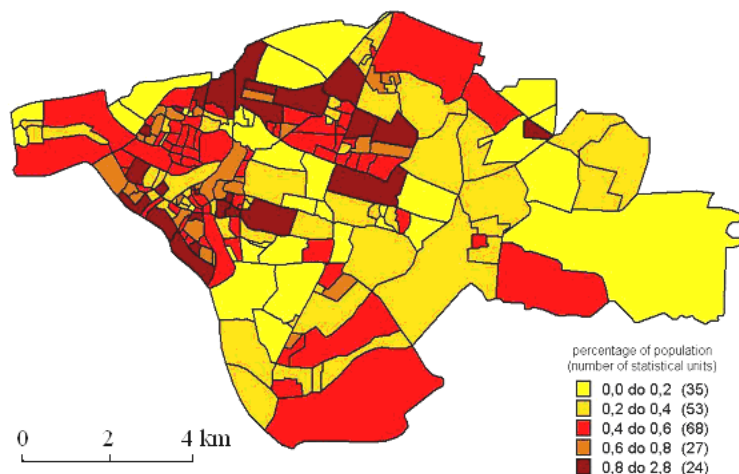


Fig. 4. Spatial distribution of population with higher and secondary education, 1988 (by authors)  
Rys. 4. Rozkład przestrzenny ludności z wykształceniem wyższym i średnim w roku 1988 (opracowanie własne)

On the other hand, people with vocational education, typical for highly industrialised Sosnowiec, also changed their location in the town space. In 1978, such population was in majority in the industrial quarters: Jęzor-Bór, Niwka-Modrzejów, Dańdówka, Klimontów. There were 55 dominating regions with the maximum concentration (from 1.5 to 0.6%) there. While the other

quarters, especially the „central” ones and the quarters which were not being populated in that time: Zagórze and Środula, mostly contained the regions with the share below 0.6% (152 regions). A great change in the spatial layout of the regions with higher concentration, which increased almost twice (up to 2.9%) was observed in 1978. It occurred, not only in the industrial



quarters, but also in the ones which were undergoing industrialisation, where 10 years earlier only few regions had had the maximum percentage share equal to 1.5%. For example in Zagórze, where 1/3 of the inhabitants had vocational education, provided by the school of the local coal mine. Apart from that, new developments provided flats mainly for coal miners and steel workers with vocational education and their families.

Analysis of spatial distribution of inhabitants with elementary education proved that in 1978 the regions with the highest contents from 1.0 to 0.6% occurred in 65 regions, mainly in the peripheral quarters, such as: Niwka-Modrzejów, Jęzor-Bór, Maczki, Dębowa Góra, Ostrowy Górnicze or Milowice, and among the central ones in: Stary Sosnowiec and Pogoń. A different picture could have been found in 1988. The number of regions with the highest share decreased from 65 to 51, and the amount of the regions with the lowest share increased to 156 (earlier only 142 regions). Such a qualitative change was also reflected in the town space of Sosnowiec. The area covered by the regions with the analysed population decreased and the rest of the population moved to the contemporarily populated large quarters where the whole families settled, which was particularly remarkable in Zagórze (SZAJNOWSKA-WYSOCKA, KULESZA, 2007).

## SPATIAL DISTRIBUTION OF POPULATION BY OCCUPATION QUESTIONS

Distribution of population according to economic sectors were the basic factors for further analysis of Sosnowiec inhabitants. The analysis was started from the primary sector – agriculture and forestry. As it was expected, they were concentrated in the quarters with agricultural and forest land use (Maczki, Zawodzie, Ostrowy Górnicze, Porąbka, Klimontów, Kazimierz). During the compared decade, no significant changes in distribution of regions with the highest share were observed, but their maximum potential had largely decreased. In 1998, there were no statistic regions with the percentage share of employees in the analysed sector higher than 3.5%, which may be interpreted as the effect of decrease of the agricultural function, despite of the fact it used to be relatively small in the analysed industrial centre.

Mapping of spacial distribution of people employed in industry and building trade is quite interesting (fig. 5 and 6). Comparable cartograms document the process of demographic urbanisation of Sosnowiec connected with opening of the Katowice Steelwork near the town, which took place in the same period. Fig. 5, presenting spatial distribution of people employed in the second sector, shows the regions with the maximum concentration (0.8–1.5%) in 1978, in such quarters as: Jęzor-Bór, Dębowa Góra and a few other regions in Zagórze. The regions with slightly lower (below 0.8–0.4%) share of employed in industry and building appeared in the “central” quarters: Śródmieście, Stary Sosnowiec, Milowice. There were 115 of them, which comprised more than a half of the statistic regions.

mieście, Stary Sosnowiec, Milowice. There were 115 of them, which comprised more than a half of the statistic regions.

In 1988, the spatial structure of employed in the industrial sector changed significantly due to ten years of intensive industrialisation of The Dąbrowa Basin. The degree of the maximum concentration in the category of employed had raised (up to 2.9%). The space (number of regions) with such percentage potential of inhabitants located in the large living quarters, such as: Zagórze, Środula had increased (fig. 6).

In fig. 6, comparing to fig. 5, transformation of the spatial structure of those regions can be observed. Previously (in 1978) they were concentrated in: Śródmieście, Stary Sosnowiec, Pogoń, which after 10 years of urbanisation processes (especially demographic ones), had lost inhabitants working in the second sector, whose number increased in the being urbanised quarters: Zagórze and Środula. It proves structural rules, according to which a type of activity determines age periods in particular places.

The quarters, where residential areas for thousands of inhabitants were being built, were also gathering people employed in services in the analysed period. As it results from the analysis of spatial distribution of inhabitants employed in the third sector, there was a significant deconcentration in the „central” quarters and concentration in such districts as Zagórze and Środula, where numerous institutions and companies providing services for the growing number of local inhabitants were founded. The quarters did not only create living spaces for families settling there because of their employment in the neighbouring Katowice Steelwork (Huta Katowice) and accompanying plants, but also generated a labour market in the second service centre developing in that part of the town space (KANTOR-PIETRAGA, SZAJNOWSKA-WYSOCKA, 2007).

## DEMOGRAPHIC-SPATIAL TYPOLOGY

A synthetic typology was carried out at the levels of 7 geodetic sections for the years of 1978–2002 and 207 statistic regions for the years of 1978–1988, which enabled to obtain complete image of demographic-spatial differentiations in Sosnowiec. National Census records of 1978, 1988 and 2002 were applied for it. The typology was prepared basing on one of the multi-variable analysis – the shortest dendrite taxonomy (FLOREK et al., 1951; Nowak, 1990). Typological classes were distinguished according to their taxonomic distance, that was the degree of similarities of the analysed units. Considering the fact that the smaller the taxonomic distance between the investigated units the bigger their similarity is, a class with the smallest taxonomic distances in the range from 0.0 to 0.5 has been distinguished. The following taxonomic distance have been estimated for the other classes: 0.5–1.0; 1.0–2.0; 2.0–3.0; >3.0.

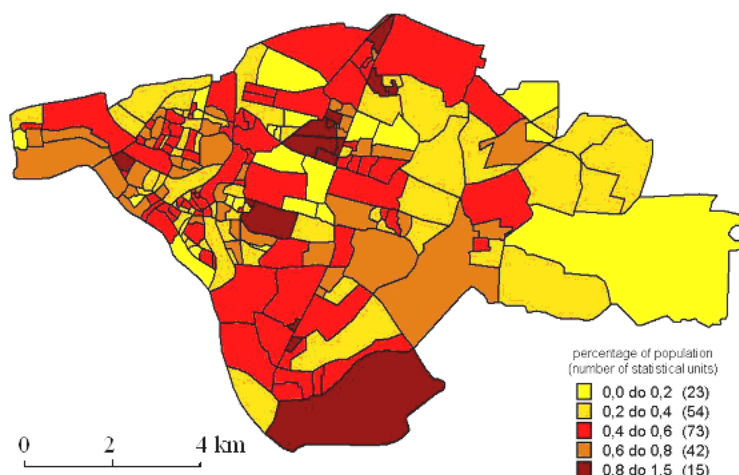


Fig. 5. Spatial distribution of population employed in industry and construction, 1978 (by authors)  
Rys. 5. Rozkład przestrzenny ludności zatrudnionej w przemyśle i budownictwie w roku 1978 (opracowanie własne)

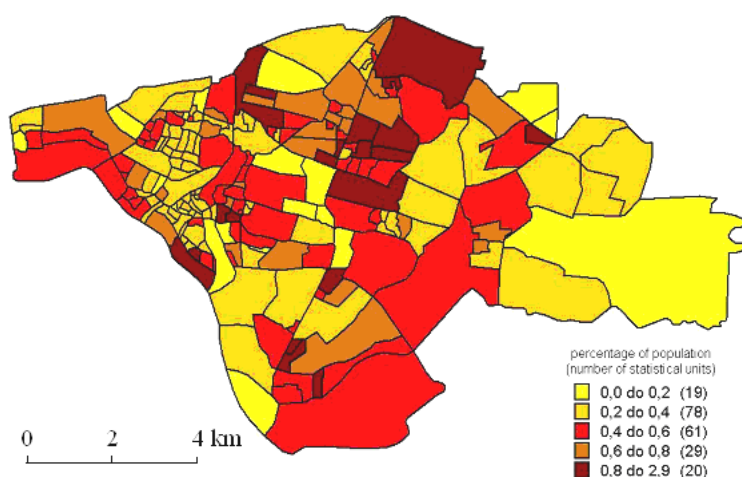


Fig. 6. Spatial distribution of population employed in industry and construction, 1988 (by authors)  
Rys. 6. Rozkład przestrzenny ludności zatrudnionej w przemyśle i budownictwie w roku 1988 (opracowanie własne)

Analysing the taxonomic distances between the geodetic sections (according to their numbers from 1 to 7), it has been observed that in the period of 1978–2002 the strongest similarity concerning social-economic features was observed in the peripherally situated quarters, such as: Kazimierz (section 3), Ostrowy Górnicze (section 4), Maczki (section 7), Porąbka and Zawodzie (section 6), where the smallest distances occurred. In 1978 the strongest similarities were observed between the sections 3 and 4 (the taxonomic distance was equal to 0.04). While in 1988 and 2002 the sections 3 and 6 were the most similar (and their distances were 0.08 and 0.02 relatively). The biggest taxonomic distances reaching over 3.0 occurred between the section 1, covering mainly the central and southern quarters, and the section 2 where Zagórze was the most dominating. The analysed distances in further periods were equal to 3.64 in 1978, 3.33 in 1988 and 3.27 in 2002. Hence, it can be stated that within the analysed economic-social structures similarities are stronger than differences in the town space.

However, it should be emphasised, that the role of Zagórze is significant in such a spatial distribution (at the geodetic sections level), which was also observed in the previous analysis.

Next the town space divided into smaller units – statistical regions has been analysed (according to the census materials of 1978 and 1988). It has been an attempt to answer the question where in the town space the regions with the smallest taxonomic distances, which means the strongest similarities in the analysed features, occurred. It was proved that 66% of the regions were in the range of the smallest taxonomic distances equal to 0.0–1.0 in 1978. After ten years, the share of the regions in the range of the maximum similarities increased up to 80%, which means a high level of resemblance, hence, there were more similarities than differences in the town space of Sosnowiec. The process of resemblance is also proved by the fact that the number of regions characterised by taxonomic distances exceeding the level 1.0 decreased from 71 to 42 in the analysed period.



The above synthetic typology enables to distinguish types of spatial homogeneity according to the criterion of its occurrence (the most similar regions in the investigated period had the analysed features at the level of 0.0–0.5). It is possible to distinguish four characteristic types:

- type I – resemblance in the town centre,
- type II – resemblance outside the town centre,
- type III – resemblance in the whole towns (in the centre and outer zone),
- type IV – no resemblance.

Sosnowiec belonged to the third type in the years of 1978–1988 (resemblance in the whole town). In the Silesia region, the type was represented mostly by industrial towns, with the number of inhabitants exceeding 100,000, relatively „young” ones that obtained the municipal status in then period from the 19th century till 1945 and were located in the centre of the Upper Silesia Industrial Region (GOP), such as: Bytom, Chorzów, Dąbrowa Górnicza, Katowice, or Zabrze (KANTOR-PIETRAGA, 2007).

## SUMMARY

Summing up the results of the spatial distribution analysis of the intra-urban population structures in Sosnowiec in social-economic features, it can be stated that:

- 1) there was an increase of the space in the age occupied structure by population in the pre-production and production age and decrease of the one occupied by the population in the post-production age (seniors),
- 2) there was an increase of the space in the education structure occupied by people with higher, secondary and vocational education and reciprocal „shrinking” of the town space occupied by people with the lowest (elementary) education,
- 3) in the structure of employment activity there was a significant decrease of people employed in the first sector and increase of those employed in the other ones, especially in services.

Analysis of the dynamics of population changes in Sosnowiec has proved that in the years of 1978–1988 there was a rise of population in Sosnowiec, which was the most significant in the following quarters: Zagórze, Środula, Śródmieście and Kazimierz. The increase of population in Sosnowiec was the result of the administration reform and an intensive inflow of immigrants migrating to work in the Katowice Steelwork located in the vicinity of Dąbrowa Górnicza. In further years, i.e. 1988–1995 and 1995–2005 decrease of population was being observed, especially in the following quarters: Pogoń, Śródmieście, Milowice, Stary Sosnowiec, Dębowa Góra and Klimontów. Permanent decrease of population has been the result of the economic system transformations which took place at the turn of 1980s and 1990s.

Similar tendencies have been observed in the whole Silesia region.

The carried out synthetic typology has proved that the process of resemblance (stronger similarities than differences) has been occurring in the town space of Sosnowiec. The social-economic structures have proved homogeneity, especially visible in the years of 1978–1988, which was the effect of coincidence of social-economic processes occurring in the period of the real socialism.

The detailed analysis of the spatial demographic changes in an industrial centre, based on the example of Sosnowiec has proved that the biggest quantitative and structural changes occurred in Zagórze, situated outside the town centre. Hence, it has been decided that changes in that quarter had the most significant influence on the spatial image of Sosnowiec.

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